

Monsanto

JUL 7 1978

PLAINTIFF'S EXHIBIT

MON-2312

DON L. MEADE - CHOCOLATE BAYOU PLANT

June 26, 1978

SUBJECT : Exposure Determinations Summary

REFERENCE :

TO : H. M. Keating - G4WA

Attached is a summary of our exposure determinations to date. This is a quick, first parr at documenting this data; we'll further refine near year end.



Don L. Meade

DLM/bg
Attachment

MAP 04400

LAM000231

MAP 04401

UNIT AREA: ETHYLENE

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED: PAGE 1 of 3

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PCRS	URINE				NO	YES	DETAILS		
AMMONIA		78		25	5	ID					
ASBESTOS	76			2/cc		0.05					
BENZENE		78		10	--	< 0.1 - 0.4					
BUTADIENE	77	78		1000	--	0.9 - 9					NOT WELL AREA
CARBON BLACK		78		(2.5)	--	ID					
CARBON DIOXIDE		78		5000	--	ID					
CARBON MONOXIDE		78		50	--	ID					
CHROMIUM METAL		78		(1)	--	ID					
CUMENE		78		50	--	< 0.1 - 1.5					
CYCLOHEXANE		78		300	300	< 100					
CYCLOHEXENE		78		300	--	< 100					
CYCLOPENTADIENE				75	--						
DIMETHYL FORMAMIDE		77		10	--	0.01 - 0.1					
DIPHENYL				0.2	0.01						

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INITIAL AREA: ETHYLENE

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED:

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CHEMICAL/PHYSICAL AGENTS	SAMPLING METHOD			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED NO YES	CORRECTIVE ACTION		COMMENTS
	AREA	PERS	URINE					DETAILS		
ETHANOLAMINE				3	3					
ETHYL BENZENE		78		100	--	< 0.01 - 0.1				
FORMIC ACID		78		5	--	ID				
HEPTANE		78		500	--	< 100				
HEXANE		78		500	--	ID				
HYDROGEN SULFIDE				10	0.025					
METHANOL				200	--					
METHYL ACETYLENE PROPADIENE				1000	--					
METHYL MERCAPTAN		78		10	< 1	ID				
NAPHTHA		78		500	--	< 100				
NAPHTHALENE		77		10	--	0.1 - 1.2				
NICKEL	77	78		(1)	--	.5 - 8			NOT WELL AREA	
NITRIC OXIDE		78		25	--	ID				
NITROGEN DIOXIDE		78		5	--	ID				

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MAP 04402

MAP 04403

AREA: ETHYLENE

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED: PAGE 3 of 3

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	TUDOR TUBESID PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PEIS	URINE				NO	YES	DETAILS		
CHISE	78	76				80 - 100 dBA < 85		X	SIGNS POSTED		
ETHANE		78		500	--	ID					
PAH*				(0.2)	--						
PENTANE		78		1000	--	ID					
ETHANOL		78		5	< 5	ID					
PROPANE		78		1000	--	< 100					
ISOPYL ALCOHOL				200	--						
SODIUM HYDROXIDE				(2)	--						
SULFUR DIOXIDE				5	--						
XYCENE		78		100	--	ID					
NYL TOLUENE		78		100	--	ID					
LENE		78		100	--	< 0.01 - 0.1					
PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS - RESINS, PL. TYPE MATERIAL											

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CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED: PAGE 1 of 3

UNIT/AREA: HYDROCARBONS

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION DETAILS	COMMENTS
	AREA	PPHS	URINE				NO	YES		
ACRYLONITRILE	78			2	<20	0.15 - 0.5				
ASBESTOS	76	78		2/cc		0.12 0				
BENZENE		78		10	--	0.1 - 0.4				
BUTADIENE		77		1000	--	0.2 - 40 <100	X		INSTALL DECONTAMINATION SYSTEM	DEPT. 23, 24, 25 SHUTDOWNS
CARBON DIOXIDE		78		5000	--	ID				
CARBON MONOXIDE		78		50	--	ID				
CUMENE		78		50	--	ID				
CYCLOHEXANE		78		300	0	ID				
CYCLOHEXENE		78		300	--	ID				
CYCLOPENTADIENE				75	--					
DIMETHYLAMINE		78		10	<10	ID				
DIMETHYL FORMAMIDE		78		10	--	ID				
DIPHENYL				0.2	0.01					

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CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED:

PAGE 2 of 3

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED NO YES	CORRECTIVE ACTION DETAILS	COMMENTS
	AREA	PERS	URINE						
ETHYL BENZENE	78	78		100	--	0.01 - 0.8			
FURFURAL	76			5	--	0.01 - 0.2			
HYDROGEN SULFIDE				10	0.025				
LPG		78		1000	--	< 100			
METHYL OXIDE		78		25	12	ID			
METHANOL		78		200	--	ID			
METHYL ACETYLENE		78		1000	--	ID			
METHYLMERCAPTAN				10	< 1				
N-METHYL STYRENE		78		100	--	ID			
NADITIA		78		500	--	< 100			
NAPHTHALENE	77			10	--	< 1 - 5.5			
NOISE	78	76				85 - 100		SIGNS POSTED	
						< 85			

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LAM000237

MAP 04406

MAP 04407

UNIT/AREA: PHENOL

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UPDATED: PAGE 1 of 2

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PERS	URINE				NO	YES	DETAILS		
ACETOPHENONE	77			--	< 1	0.5 - 2					
AMMONIA	78			25	< 5	7 - 52		X			AMMONIA COMPRESSOR
ASBESTOS	76			2/cc		0					
	78					NOT ANALYZED					
BENZENE		78		10	--	0.4 - 0.51					
		78				1.5 - 59		X	Install Decontamination System		DEPARTMENT 65 SHUTDOWN
CUMENE		78		50	--	0.6 - 2.0					
	78					19 - 59		X			CaCO3 MAKEUP AREA
ETHYL BENZENE		78		100	--	< 0.1					
MESITYL OXIDE	76			25	12	< 0.1					
p-METHYL STYRENE	76			100	--	< 0.1					
NOISE	78	76				80 - 100		X	SIGNS POSTED		
						< 85					
PHENOL	78			5	0.05	< 0.3 - 25		X			HIGH NEAR PUMP DRAIN
STYRENE	76			100	--	< 0.1					
TOLUENE	76			100	--	< 0.1					

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UNIT/AREA: PIENOL

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MAP 04408

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MAP 04409

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

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UNIT/AREA: ACRYLONITRILE

UPDATED:

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESH PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PPHS	URINE				NO	YES	DETAILS		
ACETALDEHYDE		78		200	<25	ID					
ACETONE		78		1000	--	ID					
ACETIC ACID				10	--						
ACETONITRILE		78		40	--	0.01 - 0.04					
ACROLEIN		78		0.1	--	0.02 - 0.26					PROBABLE INTERFERENCES
ACRYLONITRILE		78		2	<20	0.09 - 3.35	X		SAMPLE CABINETS		
AMMONIA	77-78			50	<5	0.1 - 150	X		INSTALL DECONT. SYSTEM - BOARD	PRE-PROJECT	SHUTDOWN/MAINTENANCE ACTIVITIES
ASBESTOS	76			2/cc		0					
	78					NOT ANALYZED					
HYDROGEN CYANIDE				10	5-10						
HYDROQUINONE				(2)	--						
METHANOL		78		200	--	ID					
MOLYBDENUM DUST (Cat. 4)	76			(10)	--	(3)	X		RESPIRATORS		
NOISE	78					80-105	X		SIGNS POSTED		
		76				<85					

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MAP 04410

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

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INITIAL AREA: RESINS/FORMALIN/DFO

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION DETAILS	COMMENTS
	AREA	PENS	URINE				NO	YES		
ASBESTOS	76			2/CC		RESINS - 0.00 DFO - 0.029				
DIPHENYL				0.2	0.01					
DIPHENYL OXIDE				1	0.01					
FORMALDEHYDE	78			3	< 1	0.10 - 0.92				
FORMIC ACID		78		5	--	ID				
METHANOL				200	--					
NOISE	78					80 - 90 < 85				
OXALIC ACID		78		(1)		ID				
PHENOL	78			5	< 5	< 0.3 - 5.6	X		BASE OF DFO-PHENOL DAY TANK	
PHENYL ETHER				1	0.01					
SILVER		78		(0.01)	--	ID				
SODIUM HYDROXIDE		78		(2)	--	ID				
SULFURIC ACID		78		(1)	--	ID				

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CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PENS	URINE				NO	YES	DETAILS		
TRIBUTYL PHOSPHATE		78		(5)	--	ID					
TRIETHYLAMINE		78		25	--	ID					
CARBON DIOXIDE		78		5000	--	ID					
CARBON MONOXIDE		78		50	--	ID					

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UNITED STATES
NATIONAL ACADEMY OF SCIENCES

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MAP 04414

UNIT/AREA: SAB

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

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CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION DETAILS	COMMENTS
	AREA	PERS	URINE				NO	YES		
ASBESTOS	76			2/cc		0				
BENZENE		78		10	--	0.3 - 0.8				
HYDROGEN FLUORIDE			76	3	--	0 - 2				
NOISE	78	76				80 - 105 < 85			SIGNS POSTED	

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CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/M ³)	ODOR THRESHID PPM	RESULTS PPM (mg/M ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PERS	URINE				NO	YES	DETAILS		
ACETOPHENONE		78		--	<1	<1					
ACRYLONITRILE		78		2.0		0.01 - 0.03					
ACROLEIN		78		0.1		0.01 - 0.35					INTERFERENCES
ASBESTOS	76			2/cc		0					
BENZENE	78	78		10	--	0.75 - 5.01	X		IMPROVE VAPOR CONTAINMENT OF PHENOL INJECTION SYSTEM		BENZENE PRE-PROJECT BOARD
CUMENE		78		50	--	27 - 295	X		" " "		PHENOL UNIT UPSET INJECTION SYS
CHLORATES	78					1 - 12			" " "		" " "
ETHYL BENZENE		78		100	--	0.11 - 0.2					
MESITYL OXIDE		78		25	--	<0.1					
p-METHYLSTYRENE		78		100	--	<1					
NAPHTHALENE		78		10	--	<1					
NOISE											

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MAP 04416

MAP 04417

ENVIRONMENTAL CONTROL

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UNPROATED:

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CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED NO YES	CONNECTIVE ACTION DETAILS	COMMENTS
	AREA	PERS	URINE						
PHENOL			75	5	<5	<1			
STYRENE		78		100	--	0.1 - 12			
TOLUENE		78		100	--	0.1 - 1			
O,m,p-XYLENES		78		100	--	1 - 10			

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CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

INITIALS: DISTRIBUTION

UPDATED: PAGE 1 of 3

CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION		COMMENTS
	AREA	PENS	URINE				NO	YES	DETAILS		
ACETIC ACID				10	--						
ACETONE		78		1000	--	0.1 - 1					
ACETONITRILE		77		40	--	ID					
ACROLEIN		77		0.1	--	ID					
ACRYLONITRILE		78		2	20	0.01 - 1.5	X		PRE-PROJECT--SAMPLE CABINETS	RESP. WORN - SAMPLING	
AMMONIA	77/78			25		1 - 50	X		RESP. INSTALLED VAPOR SYSTEM	DARGE LOADING OPERATIONS	
ASBESTOS	76			2/cc	--	0.05					
BENZENE	77	78		10	3-5	0.1 - 0.3	X		THE-PROJECT	RESP. WORN - SAMPLING	
BUTADIENE				1000	--	9-157	X		INSTALL DEDICATED LINES & VAPOR SYSTEM	DARGE LOADING OPERATIONS	
CROTONALDEHYDE				2	--						
CUMENE		78		50	--	0.3 - 2					
ETHYL BENZENE		78		100	--	< 0.01 - 0.2					
FORMALIN		77		3	--	ID					

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MAP 04419

CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UNIT/AREA: DISTRIBUTION

UPDATED:

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CHEMICAL/PHYSICAL AGENTS	SAMPLING HISTORY			TLV PPM (mg/m ³)	ODOR THRESHOLD PPM	RESULTS PPM (mg/m ³)	REQUIRED		CORRECTIVE ACTION DETAILS	COMMENTS
	AIR	PER	URINE				NO	YES		
N-HEPTANE		77		500	--	ID				
N-HEXANE		77		500	--	ID				
HYDROGEN CHLORIDE				5	1-5					
HYDROGEN CYANIDE		77		10	5	ID				
HYDROGEN FLUORIDE		77		3	--	ID				
HYDROGEN SULFIDE				10	0.025					
ISOPROPYL ALCOHOL		77		400		ID				
METHANOL		77		200	--	ID				
NAPHTHALENE				10	--					
NOISE	78					< 85				
N-OCTANE		77		500	--	ID				
OXALIC ACID		77		(1)	--	ID				
PEANUT				(0.2)	--					
PHENOL	78			5	0.05	< 0.3 - 60		X		TANK CAR LOADING
HYDROQUINONE		77		(2)		ID				
* PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS - RESIN										

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CHOCOLATE BAYOU INDUSTRIAL HYGIENE SUMMARY

UNIT/AREA: DISTRIBUTION

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MAP 04420